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SOME ASPECTS ON THE TREATMENT OF SPENT LIQUORS FROM THE CELLULOSE INDUSTRIES IN ORDER TO REDUCE POLLUTION

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Some Aspects on the Treatment of Spent Liquors from the Cellulose Industries in Order to Reduce Pollution.

By Rolf Brännland, Mo och Domsjö AB, Örnsköldsvik, Sweden.

SUMMARY

Many cellulose industries are vexed with severe pollution problems owing to the low content of useful material in the wood. It has been shown that a production of 100,000 tons of bleached sulfite pulp may cause a BOD of wastes equivalent to a city of 1,300,000 inhabitants.

The obvious advantages of using soluble bases have, however, accelerated the development of processes for recovery of chemicals and heat from spent pulping liquors. Simultaneously the possibilities of reducing pollution have increased greatly.

In the Kraft process the recovery technique is well established and the BOD of effluents from such a mill is low, i.e. 50-70 kg BOD per ton pulp. On the other hand there seems to be no perfect solution as yet to the air pollution problem.

The acid sulfite recovery processes have been developed mostly in the last 20 years. Evaporating and burning spent sulfite liquors is now technically feasible, and by these operations the BOD of effluents may be reduced to 60-80 kg per ton pulp, depending on efficiency of pulp washing, type of pulp, etc.

Recovery of calcium and ammonium is not regarded as economical, whereas magnesium is presently recovered in several mills but wasted in some. Sodium is used only in a few mills, and necessarily recovered. The Stora, Sivola, Western-Precipitation, and Gauvin processes are described.

In semi-chemical mills, using neutral sodium sulfite, "cross-recovery" with a neighbouring Kraft mill is often practiced. The recovery is complicated by the low heat value of the spent liquors, but facilitated by the lower demand for purity of cooking liquors. The Mead and Zimmermann processes are described. The BOD of effluents from a semi-chemical mill with recovery may reach 30-40 kg per ton pulp.

Finally an example is given of the BOD development at a Swedish sulfite mill; fermentation gave a reduction to about 75 %, burning to about 35 %, and switching to sodium base to about 30 %.

The most important recovery processes are represented by flow sheets, and references are given to more detailed descriptions in the literature.

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